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Induction of antibody responses to new B cell epitopes indicates vaccination character of allergen immunotherapy.

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Whether the modulation of antibody responses can contribute to the improvement of clinical symptoms in patients receiving allergen immunotherapy represents a controversial issue. We have used purified [seven recombinant (r) and one natural] timothy grass pollen allergens as well as recombinant B cell epitope-containing fragments of the major timothy grass pollen allergen, Phl p 1, to investigate humoral immune responses in eight allergic patients receiving grass pollen-specific immunotherapy. We found that the administration of aluminium hydroxide-adsorbed grass pollen extract induced complex changes in allergen/epitope-specific antibody responses: increases in IgG subclass (IgG1, IgG2, IgG4) responses against allergens recognized before the therapy were observed. All eight patients started to mount IgE and IgG4 responses to continuous Phl p 1 epitopes not recognized before the therapy and a de novo induction of IgE antibodies against new allergens was found in one patient. Evidence for a protective role of IgG antibodies specific for continuous Phl p 1 epitopes was provided by the demonstration that preincubation of rPhl p 1 with human serum containing therapy-induced Phl p 1-specific IgG inhibited rPhl p 1-induced histamine release from basophils of a grass pollen-allergic patient. Our finding that immunotherapy induced antibody responses against previously not recognized B cell epitopes indicates the vaccination character of this treatment. The fact that patients started to mount de novo IgE as well as protective IgG responses against epitopes may explain the unpredictability of specific immunotherapy performed with allergen extracts and emphasizes the need for novel forms of component-resolved immunotherapy.

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